Vibration assessment on plant blower structure

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***Abstract*—** The paper presents a vibration measurement analysis for a plant blower with support frame. The blower and the supporting structure have been experiencing high vibration exceeding the recommended level in ISO10816.3. The blower function is to compress gas to sufficient pressure in order to overcome the pressure drop in a local chemical processing plant. The purpose was to investigate the cause of high vibration to this blower assembly and supporting structure. Vibration measurements were taken at various points on the machine and structure for spectrum analysis. Operating Deflection Shape (ODS) measurement was also performed to view how the machine would be excited along the operating spectrum range. Finite element analysis (FEA) was also performed to compare the normal modes of the supporting structure to the measured data. The data results suggested that the blower supporting structure may have experienced resonance around 320-330 Hz especially to the cross beams which made up the structure. In addition, beating was also found in the spectrum data captured on the motor-blower itself which may explain the excitation source.

***Keywords*—**Blower vibration, Plant Condition Monitoring, Operating Deflection Shape, Modal analysis